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REPORT ON HEALTH EFFECTS OF OZONE DEPLETION AND UVB RADIATION

STAKEHOLDERS' FORUM

HELD TUESDAY MAY 5, 1992
EDMONTON, ALBERTA

Alberta
GOVERNMENT OF ALBERTA

REPORT ON
HEALTH EFFECTS OF OZONE DEPLETION AND UVB RADIATION
STAKEHOLDERS' FORUM

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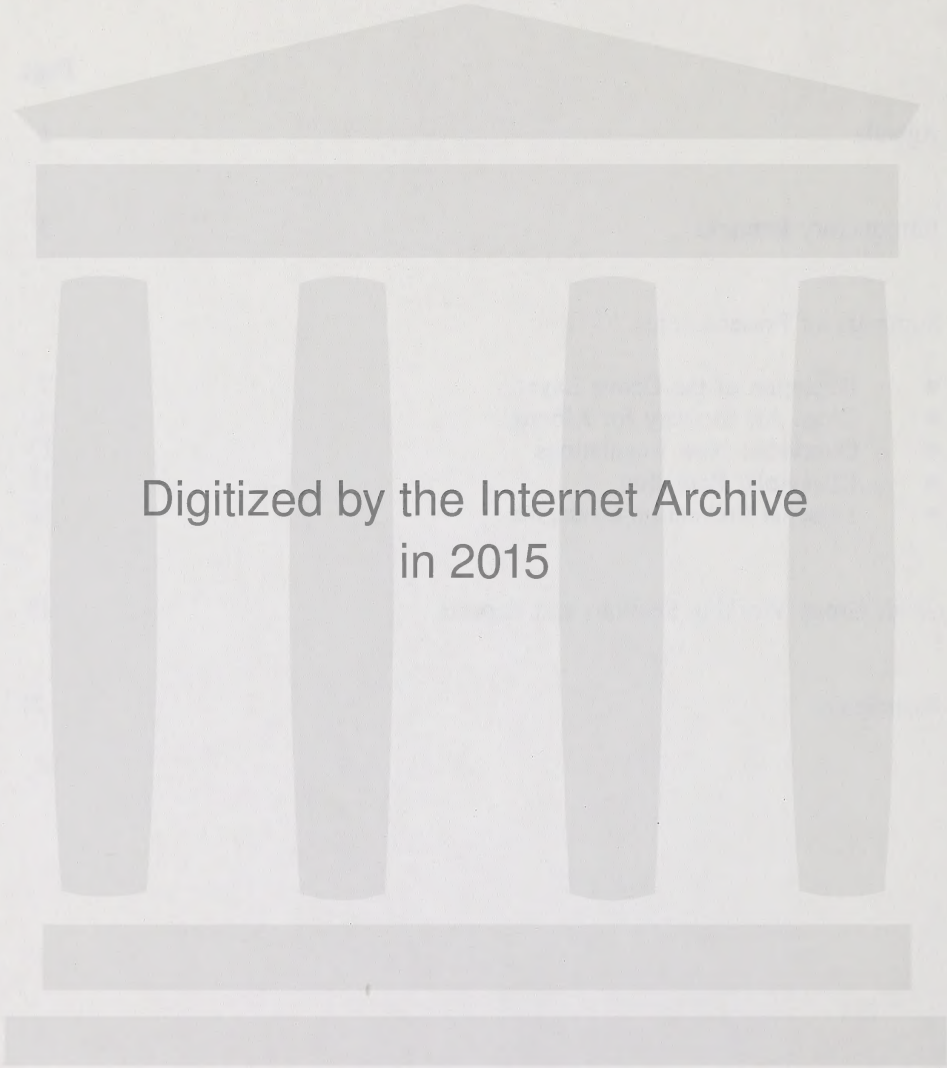

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HEALTH EFFECTS OF OZONE DEPLETION AND UVB RADIATION STAKEHOLDERS' FORUM

Tuesday May 5, 1992
Edmonton

AGENDA

1. Introductory Remarks
   Katherine Caine, Ph.D., Director of Health Promotion
   Alberta Health

2. Depletion of the Ozone Layer
   Tim Goos, Chief of Scientific Services
   Environment Canada

3. Clean Air Strategy for Alberta
   Bill MacDonald, Head of Air Quality Branch\
   John Shires, Head of Community Affairs Branch
   Alberta Environment

4. Ultraviolet Radiation
   Sharon Campbell, Ph.D., Alberta Cancer Board

5. Personal Prevention Strategies
   Dr. Barry Lycka, Canadian Dermatology Association

6. Small Group Working Session and Reports

   To discuss what is currently happening, what our organizations can do and what should be the role of government.

7. Participants

AGENDA

INTRODUCTORY REMARKS

Dr. Katherine Caine, Alberta Health

Thank you for coming. My name is Katherine Caine and I am the Director of Health Promotion for Alberta Health. There are a number of us involved today and it is my job to give you a little background of how we got here, followed by an overview of what to expect from the day and what we would like to see come of it. Thank you to Sandi Darrell (of the Health Promotion Branch) for all the work she has put into organizing this day on short timelines, and to the Communications Branch for all its support. Also, I'd like to introduce the Alberta government departments that assisted: Agriculture, Education, Family and Social Services, Energy, Environment, Occupational Health & Safety, Tourism, Recreation and Parks and the Alberta Personnel Office. Environment Canada has also been an active participant.

Ozone depletion and the resulting health effects of increased exposure to UV (ultraviolet) radiation is an important issue. There are a number of questions still unanswered but enough evidence to call us to action. I believe it is important for all of us, indeed for all Albertans, to get a sense of what this issue is about and what the potential ramifications are not only for human health, but for the health of the ecosystem of which we are all a part.

When first beginning to look at the health effects of UV radiation from the sun, we met with the Alberta Pharmaceutical Association, the Alberta Cancer Board and the Canadian Cancer Society. We quickly realized that if we were going to inform Albertans and, more importantly, make it easier for them to make healthier choices, we could not do it by working simply within the health system. In the past we might have sent out an advisory to health units and physicians and spent some money on a media campaign. Now we know that new messages need to be spread and reinforced to people through all areas of their lives, in their communities and where they live and work. Changing behaviour is a personal responsibility and it is also a community responsibility to make these changes easier. For example, it is important to have inexpensive hats and a supply of small bottles of sunscreen at outdoor events. It would be easier for schools and day cares to have children play in the shade if there were shade trees to play under. And, it is easier to dress for the sun if clothing manufacturers market their fashions in that way.

With this in mind, the representatives from the provincial government departments as well as Environment Canada began meeting in late March to educate each other, identify some of the questions to be addressed within each department and to begin planning for community education and involvement. We asked each department to identify those organizations and groups they felt could provide some leadership in addressing this issue within the community. You have each been identified as having some influence within your sector. I understand we have representatives from: agriculture, consumer associations, education, daycares, environmental organizations, health, municipalities, labour, the petro-chemical industry, and recreation and sports organizations. Are there any of you that I have missed?

It is important to realize that we really have two issues here. The first is ozone depletion. Currently the facts are that the ozone layer is being depleted. The rate and the extent of the environmental effects are not absolutely certain. The secondary issue is the effect of UV radiation on human health. Health effects include skin cancer, premature aging of the skin, impaired functioning of the immune system and eye cataracts. We are certain of the rising rate of skin cancer over the past few decades. This increase is generally attributed to changing lifestyle behaviours with more people spending more time in the sun.

So the link becomes obvious: if the ozone layer decreases, our exposure to UV radiation increases as will the immediate health effects and, more importantly, long term health effects will increase.

We felt there was an immediate need to:

- Provide the public with consistent messages about protective behaviour;
- Provide information to those who can influence behaviour through their communities; and
- Develop a coordinated, long term provincial strategy to deal with the broader impacts of ozone depletion.

Today we would like to begin that process by:

- Providing you with some information on the nature and scope of the issue;
- Identifying what is currently happening;
- Becoming informed of appropriate protective behaviour;
- Providing you with an opportunity to share resources, ideas and strategies to get this information out to your communities and encourage people to practice protective behaviour; and finally
- Identifying the elements of a good process for addressing this issue at the provincial level.

We have representatives from both the environment and the health sectors to give you the most current information. It is not complete information. Among the presenters you may note areas of agreement, areas of uncertainty and some points of disagreement. That is the state of knowledge at this time, it is not a reason for inaction.

Tim Goos, Chief of Scientific Services, from Environment Canada will explain how the ozone layer functions, how severe the depletion is, as well as what is being done and still needs to be done to protect it.

John Shires, Head of Community Affairs Branch and Bill MacDonald, Branch Head, Air Quality Branch for Alberta Environment will explain what is happening at the provincial level in terms of the Clean Air Strategy for Alberta and proposed environmental legislation.

Dr. Sharon Campbell from the Alberta Cancer Board has just returned from a conference on UV radiation and will provide us with an overview of the health effects.

Dr. Barry Lycka from the Canadian Dermatology Association will conclude with an overview of what protective behaviours are being recommended.

Each presenter will talk for about 20 minutes and there will be time for questions. At the end of the morning, speakers will respond to questions as a panel.

In the afternoon we will be working in small group sessions to answer these questions:

- What initiatives, if any, are already happening in your community?;
- What are possible strategies your organization and community could adopt?; and
- What would you like to see happening at the provincial level?

SUMMARY OF PRESENTATION FROM:

Tim Goos, Environment Canada

"DEPLETION OF THE OZONE LAYER"

The ozone layer of the atmosphere is in what is called the stratosphere which is 15-50 KM above the earth. The maximum concentrations of ozone occur about 20-30 KM above the earth. 90% of all the atmospheric ozone occurs in this layer.

The ozone layer is a natural phenomena of the atmosphere. Ozone is both formed and destroyed by UV radiation Ozone is formed when incoming UV light is absorbed by an oxygen molecule (O_2). This molecule splits into two individual oxygen atoms (O_2 + UV light = 2O). These atoms react with another oxygen molecule to form ozone ($O+O_2=O_3$). UV light also performs the reverse process. It splits the ozone (O_3) molecule to produce oxygen. This formation and destruction mechanism continue anytime there is sunlight and they are held in approximate balance.

We have disturbed the destruction side of the balance. We have added chemicals to the atmosphere which act as catalysts in the destruction of ozone. These chemicals reduce the amount of ozone in the stratosphere without being destroyed themselves.

The sun's rays contain radiation of various wavelengths. Much of this radiation is visible but other radiation is in other wavelengths including ultra-violet (UV). Most of the energy in the sun's rays is in the visible and infra-red range and this is what makes the sun feel warm. In contrast, the damaging UV light contains very little energy - we cannot feel on our skin the effect of UV until the damage is done. This becomes very important when you cinsider that the thinning of the ozone layer is allowing more UV rays into the atmosphere. We can't rely on our feeling of damage to protect us.

We have observed a decline worldwide in the amount of ozone. Over North America, this decline amounts to about 8% in the past decade on an annual basis. In fact, the decline is greatest in the late winter and early spring with only small losses during the fall. The loss over the winter amounts to 20%. In Canada, we have 8 stations which measure ozone and one of those is in Edmonton.

There are key differences between the southern and northern hemispheres. In the northern hemisphere, our maximum loss has been 20% during the spring. In the southern hemisphere, losses up to 90% over an area as large as Canada have been recorded. This is what is called the ozone hole. It truly is a very significant loss. In comparison, we refer to our loss in the northern hemisphere as a thinning of the ozone layer.

In February 1992, NASA scientists reported the observation of high concentrations of ozone destroying chemicals over the northern hemisphere - much higher than previously recorded and more typical of southern hemisphere conditions. This report sent a clear message to many of us as it suggested we could potentially experience very significant losses. This was only a potential loss as it depended on the weather continuing cold through the month of March. Over North America, it did not stay that cold and our losses were not large. Over Siberia, it did stay cold and they have recorded losses approaching 40%.

Klaus Topfer, the Minister of Environment for Germany, noted that when the problem was largely in the southern hemisphere, we had agreements to drastically reduce our use of ozone depleting chemicals by 1997 or 1999. When the problem appeared to be a northern hemisphere problem this spring, many countries were able to advance the deadlines to 1995.

The unit of measurement for ozone is a dobson unit (DU). Typically, we have about 400 DU over Edmonton in the spring. Ozone is naturally thicker in the late winter and thinner in the fall. It will vary from 430-450 DU in the late winter to 350 DU in the fall. One hundred DU is equivalent to ozone 1 mm thick. Thus, our "ozone shield" is only about 4 mm thick - not a very significant shield!

We began measuring the intensity of UV light at Edmonton this spring for the first time. This past weekend, we measured values of 500 joules per square meter. Typically, mid-summer values in Edmonton will be 750 joules per square meter while in the tropics it's typically 1250 joules per square meter.

Chlorofluorocarbons (CFC's) (largely used for refrigeration) and halons (used for fire fighting) are the primary ozone depleting chemicals in use today. An international control program, called the ***Montreal Protocol***, has been developed to control these chemicals. The ***Protocol*** prescribes that most uses of the most harmful chemicals will end during this decade. In fact, Canada's (and other countries') use of these chemicals have already been reduced by 60% or greater. However, there are two significant problems. First, these chemicals have very long lifetimes in the atmosphere. They last from 70-100 years. Releases from car air conditioners today, for example, won't even reach the stratosphere for 10 years. Then they will begin destroying ozone. Second, some of the replacement chemicals are more expensive. Countries in the third world will require financial assistance to adopt these new chemicals. As a result of these two items, we can expect the thinning of the ozone layer to continue to get worse for another two decades before slowly starting to improve. This issue will last well beyond 1992.

In response to the tremendous number of requests, the Atmospheric Environment Service introduced a new service this spring to help people make choices. We began issuing Ozone Watch during March. This is a weekly update on the status of the ozone layer. This product is distributed to the media for use. They have not, however, picked up the information and broadcast it to the public as much as we would have liked.

In the federal government's Green Plan, we had planned to provide UVB advisories by 1993. These would be regular observations and forecasts of UVB for the publics' use. To respond to the publics' interest, we have attempted to accelerate this process. We are now developing a UVB Information Program for implementation this spring. This will contain UVB information on a daily basis in one of the following formats:

- UVB Radiance Values (joules/m_2),
- UVB Index (0-100) with 100 being typical of the tropics),
- a worded UVB Category - low to extreme values,
- a worded "burn" Index - the number of minutes to burn for average white skin type.

We hope to have this program available by June 1, 1992. We are currently working with focus groups to identify which form is the best and which would be most useful.

SUMMARY OF PRESENTATION FROM:

John Shires, Alberta Environment

"CLEAN AIR STRATEGY FOR ALBERTA"

Recently, we have witnessed growing concern and debate on atmospheric issues on a global level. In Canada, national assessments, strategies and management plans to address issues such as acid deposition, global warming and smog have been undertaken and commitments to stabilize or reduce emissions have also been undertaken.

In Alberta, our economy relies heavily on the production of energy and prior to the emergence of the global warming issue, the environmental impact of acid-forming emissions was the high priority on the industry's and government's agendas since the 1970s. Any Canadian initiative to limit domestic energy emissions would have an impact on the Alberta economy. With this thought in mind, in March 1990, the Alberta government announced the Clean Air Strategy for Alberta (CASA), developed by departments of Energy and Environment. Its purpose was to encourage public discussion on gaseous emissions from the production and use of energy in Alberta.

CASA has three objectives:

- To identify the most important issues associated with energy production and use;
- To outline practical and achievable actions that could be taken by consumers to reduce emissions; and
- To develop policy and program recommendations to present to the Alberta government.

Other implicit objectives for consultation program:

- To seek input on the strategic direction domestically and in response to national initiatives;
- To encourage informed discussion;
- To gauge the level of public and industry concerns; and
- To encourage collaboration and cooperation between natural competitors.

To ensure an effective public consultation process, as open and objective as possible, a 13-member advisory group was established;

Bill Anderson/Bob Feick
Independent Petroleum Association

Nick Bayliss
Alberta Public Health Association

Al Brekke
Electric Utilities Planning Council

Giacomo Capobianco
Coal Association of Canada

Andy Day
Canadian Chemical Producers' Association

Jason Edworthy
Small Power Producers' Association

George Flynn (observer)
Alberta Health

Rob Macintosh
Alberta Environmental Network:
Energy/Clean Air Caucus

David Powell/Doug Bruchet
Canadian Petroleum Association

Phil Prince
Energy Resources Conservation Board

Lillian Staroszik/Sharon Fisk
Alberta Urban Municipalities Association

Brian Staszenski
Alberta Environmental Network:
Energy/Clean Air Caucus

Ken Smith
Co-Chairman, Alberta Environment

Norm MacMurchy
Co-Chairman, Alberta Energy

The advisory group reviewed and commented on all information provided under their direction.

The consultation process was completed in four phases, from March 1990 to November 1991 with the final result being the document ***Report to the Ministers***. It was a consensus document, signed by all advisory group members. It identified a number of air quality challenges:

- A need for a more comprehensive system for managing air quality in Alberta;
- Local air quality issues and problems need to be addressed on a priority basis, on a regional basis and considered cumulatively as well;
- A strong commitment to cost-effectiveness and flexibility is required;
- Scientific and economic uncertainties have to be addressed;
- Alberta needs to develop a position on current and anticipated developments to reduce or stabilize gaseous emissions; and
- Albertans need to understand the required commitment and be willing to make necessary lifestyle changes.

We found that Albertans needed information before they could make decisions. So the educational component of the process we found to be equally as important to the process as the "information out" component.

The final report does not attempt to resolve specific issues with narrow measures outlining a prudent and practical framework for decision-making. Instead, a "vision" for clean air was reached. The vision was the basis for the development of a mission statement, beliefs and values that formed the philosophical basis for the overall strategy (see ***Report to the Ministers***). They addressed:

- The concept of fairness in style of decision-making;
- Protection of environmental health, environmental quality and economic viability; and
- Albertans' responsibilities to the international community.

Another aspect of the report that was extremely important, and a highlight of the process, was a consensus reached on greenhouse gas emissions. It was reviewed and approved by Cabinet and presented to the Canadian Council of Ministers of the Environment in March 1992. It is the only position taken by any province on actions that can be taken to reduce greenhouse gas emissions.

The recommendations in the ***Report to the Ministers*** are being reviewed by Cabinet. It is hoped that in the not too distant future there will be a decision by the Alberta government that reflects the policy for clean air strategy actions in the future.

Air quality issues -- greenhouse gases, smog, acid deposition -- can't be addressed in isolation. There are complex relationships among them. To achieve the goal of clean air is a challenge for individuals, industry and government. The exercise you are all involved in is part of this.

There may be some advantage to what CASA has been able to achieve by way of consensus. There are a significant number of common concerns being felt by all of you but there doesn't appear to be very many common causes and no common strategies. The process CASA undertook might be a model for you to consider in discussions as to how you are going to deal with this in the future. It was a particular strength of CASA to bring together so many divergent views to the table and arrive at a consensus document.

SUMMARY OF PRESENTATION FROM:

Bill MacDonald, Alberta Environment

These are exciting times for our department with proposed new acts and regulations dealing with air quality and ozone-depleting substances.

In Alberta, we're concerned with fitting into what's happening provincially and on the national and international scenes as well.

Some of Alberta's legislative thrust to deal with ozone depleting substances comes from:

1985 *Vienna Convention* (monitoring and scientific studies);

1987 *Montreal Protocol* (countries around the world agreed to a 50% reduction of CFCs and halon use and production by 1999)

1989 *Helsinki Statement* (tightened up international agreements to an 85% reduction of CFC and halon use and production by 1999)

1990 *London Statement* (100% reduction of CFC and halon use and production by 2000)

As concern about CFC and halon use has risen dramatically, the timeline has accelerated. Subsequent to the ***Montreal Protocol***, Canada and 13 other countries agreed to a 100% reduction in production by 1997. Through the Canadian Council of Ministers of Environment (in March 1992) the commitment is a 100% reduction in CFCs by December 31, 1995; 100% reduction in halons by December 31, 1994; HCFCs reduced 100% by 2020; and CFCs recycling and recovering initiatives would be put into place by all provinces by December 31, 1992.

There is positive news in Canada:

- The consumption of CFCs is down by 45% from 1986, well ahead of ***Montreal Protocol*** requirements;

- Major auto dealerships across Canada have programs for recovering and recycling the CFCs from automobile air conditioning systems.

On the HCFCs (the replacement for CFCs) -- they have 2 to 5% of the ozone-depleting potential of CFCs, so they are quite a bit less, but still a cause for worry in the longer run. There are CFC replacements for some applications that are completely ozone friendly.

Alberta Environment has proposed a new ***Environmental Protection and Enhancement Act.*** It has been out for public review for over one year. We've also had out for public discussion new regulations to accompany the act. There is a proposed Substance Release Maximum Levels Air Emissions Regulation with a specific area dealing with ozone-depleting substances. We didn't have anything before. A key point in this proposed legislation is a definition of an ozone depleting substance which is "any substance capable of depleting ozone in the ambient air". It's slightly more extensive than this definition, but it links in with compounds we are also going to be regulating. As well, we propose (as Environment Canada does) regulating:

- All use of CFCs - 11, 12, 113, 114 and 115;
- HCFCs in refrigeration and air conditioning systems;
- Use of halons 1211, 1301 and 2402 used in fire suppression;
- Carbon tetrachloride; and
- Methyl chloroform.

A section in the new regulations deals with a general prohibition on the release of any CFCs, halons or other compounds in the atmosphere. Another section deals with prohibiting the manufacture, sale or use of: propellent; packaging; small portable fire extinguishers; rigid foam insulation; and furniture foam with ozone-depleting substances.

We are looking at bringing in acts and regulations this fall and, effective on that date, there will be no unauthorized allowance for release from refrigeration or air conditioning systems.

There are some exclusions to regulations for certain uses:

- Medical and veterinary;
- Use of halons to fight fires; and
- Where regulations would be in conflict with other legislation like those established by the Canadian Standards Association, Alberta Occupational Health & Safety and the Federal Department of Transportation.

In regards to recovery and recycling, it will be by implication. This means if you are prohibited from releasing into the atmosphere, you've got to recover, recycle or destroy the material. Training and certification will be required for tradespeople. Regulations will also make reference to the ***Federal Code of Practice for the Reduction of Chlorofluorocarbon Emissions from Refrigeration and Air Conditioning Systems.***

In terms of enforcement, if people don't comply with regulations, there are strict penalties proposed. A weakness, pointed out before this new act, was that we didn't have tough enough fines. We've really increased fines and will take hard enforcement action with businesses that are not recovering, recycling or destroying ozone-depleting products.

This is an important issue for Albertans. Our department is addressing this priority through new legislation and it is going to be coming into effect this fall.

SUMMARY OF PRESENTATION FROM:

Dr. Sharon Campbell, Alberta Cancer Board

"ULTRAVIOLET RADIATION"

The Alberta Cancer Board (ACB) is appointed by the provincial government and has the legislated mandate for the diagnosis, treatment, prevention and research of cancer. The ACB administers the Cross Cancer Institute in Edmonton, the Tom Baker Cancer Centre in Calgary and several associate clinics around the province.

The primary role of the Cancer Prevention Program is to conduct research and evaluation about the prevention of cancer and, in collaboration with other partners, find the most effective strategies for reducing the risks of getting cancer.

Skin cancer is an important area for research and collaboration since most is preventable. The main cause of skin cancers is ultraviolet radiation (UV), the most common source being sunshine. There are three types of UV rays:

- UVC rays are absorbed completely by the ozone layer, never reaching the Earth;
- Up to 90% of UVB rays are absorbed by the ozone layer. As the ozone layer is depleted, less of the UVB rays will be absorbed. These are the "burning" rays which damage the DNA (the controlling mechanism in a cell) that tells cells when to divide and what to become. When DNA is damaged, the cells may become cancer cells, thus UVB rays cause skin cancer.
- UVA rays are the longest rays on the light spectrum. These are the "tanning" rays because they penetrate deeper into the skin, stimulating melanoma production which leads to a tan. UVA rays also prevent damaged cells from healing and, in this way, may promote cancer. That is why we recommend people don't tan or go to tanning salons that use UVA rays. Although UVA doesn't cause cancer, the damage to cells accumulates over a lifetime, increasing the risk of cancer.

Ultraviolet exposure can be classed as chronic or intermittent. Chronic is continuous exposure over a lifetime. Intermittent is the intense burst or what kids call "power" tanning. Each has a different effect on the body. Chronic exposure can cause common skin cancers such as basal or squamous cell. Intermittent exposure increases your risk for getting melanoma which is a more serious cancer.

The other element of ultraviolet radiation is its intensity. During summer, 1 o'clock (daylight saving time) the sun is directly overhead. At this time of day, the sun's rays have the least amount of atmosphere and ozone to penetrate while travelling to earth. At 2:30 p.m., the angle of the sun is different, so the sun's rays have farther to travel, so more of its' rays are absorbed. By 5:00 p.m., the angle of the sun is more oblique and, with even a longer distance to travel, more of the harmful rays are absorbed. This is why recommendations are made to avoid the midday sun.

It's hard to give exact times as to when to avoid the heat of the day because it depends where you are on Earth. A simple way to convey this message is, "If your shadow is shorter than you are, you shouldn't be in the sun."

Several other factors affect ultraviolet ray exposure. Altitude is one: UV rays are more intense at higher altitudes (e.g. on a mountainside as opposed to the prairies). Clouds only absorb 70 to 80% of UV rays, so precautions need to be taken on cloudy days. Some UV gets through shade so other precautions are needed here as well. Reflective surfaces (sand, snow, concrete) "bounce" UV rays back so extra care must be taken. UV rays will penetrate water up to three feet, so if swimming outdoors, you should wear a waterproof sunscreen or t-shirt.

Some of the acute health effects of UVR exposure are:

- Sunburns (which indicate your skin has been severely injured, the same as burning your hand with hot water);
- Photosensitivity (some people may be allergic to the sun or are hypersensitive because of certain medications).

Some health effects of chronic UVR exposure are:

- Cataracts of the eye;
- Premature aging and wrinkling caused by UVA rays. These are the rays used in tanning salons;
- Pigment alteration (such as freckles, moles, "liver spots"); and
- Pre-malignant lesions and malignant lesions.

There are three types of skin cancers: basal cell, squamous cell and melanoma. Basal and squamous cell cancers are very common and easily treated. Over 3,000 cases are diagnosed each year in Alberta and the number is increasing. The increase we see now is related to tanning patterns 20 to 30 years ago, not the current depletion of the ozone layer. In the early 1900s, having white skin was very fashionable because it indicated you were a lady or gentleman of leisure. We've seen a reversal in thinking over the last 20 years where a tan is now fashionable.

Malignant melanoma is a much more serious type of cancer and occurs on areas not exposed to the sun such as the trunk and legs. Intense exposure, such as one gets during a winter vacation in the tropics, increases the risk of melanoma. Chronic exposure that outdoor workers or farmers have seems to protect against getting melanoma although not against basal or squamous cell skin cancers. Melanoma is more common at a younger age (30 to 40 years), while basal and squamous cell cancers are more common in older adults as the result of cumulative exposure to UV rays over a lifetime.

There are some non-modifiable risk factors.

Those people who are at highest risk have red or blonde hair, light skin colour, blue or green eyes and lots of freckles or moles. While we can't change these factors, we can change our own exposure to the sun. It has been estimated that as much as 80% of your lifetime sun exposure occurs in the first 18 years of life and that up to 75% of all skin cancers could be prevented by reducing children's exposure to the sun.

As part of the Steve Fonyo Cancer Prevention Program, the Alberta Cancer Board collected data on over 4000 adults, aged 35-64, living in Red Deer, Lethbridge, Medicine Hat and Grande Prairie.

The results showed:

- Only 58% of women and 35% of men believed avoiding sun exposure was very important in reducing the chances of getting cancer;

- 57% of women and 43% of men believed the chances of a cure were excellent if skin cancer was detected early. This data suggests the public needs more education on the topic since we know skin cancers are very preventable if UV ray exposure is avoided and is very curable if detected early. Even with melanoma, early detection is very important;

- More men than women worked half time or more outside in summer (34% vs. 7%) and spent 5 hours or more outside in recreational activity (20% vs. 15%); and

- Less than 50% of men or women regularly used sunscreen, wore hats, wore long sleeved clothes or avoided the sun between 10 a.m. and 2 p.m. Even among people at highest risk (those with fair hair, light skin and blue or green eyes), less than half followed these recommendations regularly.

What these results don't show is what the weather was like or what people were doing outside when they took precautions. This leaves a gap in our knowledge and we can only give general health information to the public rather than target specific risky behaviours or certain activities like wearing hats on cloudy as well as sunny days. And, we have no information on any other age group outside the 35-64 year olds.

What is the Alberta Cancer Board doing?

1. The ACB operates two community based prevention programs in Lethbridge and Medicine Hat in collaboration with the local boards of health. Over the last several years, these communities have implemented a number of different sun programs. One program, "Buckle Up Baby", was done in collaboration with the Jaycees to provide information and sunscreen samples to new mothers borrowing car seats from the health units. A sun protection float was put in the Medicine Hat parade. In Lethbridge, "Miss Lily White" handed out 1200 sunscreen samples and information material for each of the 10 days of the summer fair. For the last two years, they have developed a storyboard for children at day camp, reaching over 900 children.These programs are currently being evaluated.

2. The ACB is also working with the Alberta Pharmaceutical Association to evaluate changes in pharmacists' knowledge of sun protection for their customers.

3. We are collaborating with Environment Canada on a pilot study of 15 to 64-year-olds to find out what activities people are doing when outdoors, what protective measures they take, how long they are outdoors during the midday and what their perceptions of the weather and UV ray exposure are.

4. We have also proposed a five year skin cancer control program for Alberta and are seeking funding.

Challenges for the future:

1. We need better measurements of risk factors to identify high risk populations and be able to target messages. For example, the number of sunburns as a child increases the risk of skin cancer, but who remembers how many sunburns they had as a child? Or how many moles they have on their body?

2. A co-ordinated, collaborative approach is needed. I'd like to thank Alberta Health for bringing everyone here today to address this important issue. This type of collaboration is needed to bring the health education and environment people together.

3. We need to evaluate what we are doing so we know what works, what doesn't, what has the biggest impact and what is cost effective.

4. Finally, we need to leave the public with a positive, helpful message that will help them understand our recommendations and still enjoy their summer.

SUMMARY OF PRESENTATION FROM:

Dr. Barry Lycka, Canadian Dermatology Association

"PERSONAL PREVENTION STRATEGIES"

Today we are dedicated to a better understanding of the sun and with this we realize the sun is a double-edged sword. While it is the source of all life, it causes at least 90% of all skin cancers. The relationship between the sun and skin cancer is starting to be reported in the press. The good news is that, unlike any other form of cancer, skin cancer is almost entirely preventable and curable.

Let's for a minute recall the problem.

The problem was addressed at least six years ago in a June 9, 1986, issue of ***Newsweek***. The writers clearly showed an alarming increase in melanoma, one of the types of skin cancer. They directly attributed this to repeated sunburns. As already stated by Dr. Campbell, our incidence of basal cell and squamous cell carcinomas is increasing by 5 to 7% a year and our incidence of melanoma is doubling every 3 1/2 years. The lifetime risk of developing a skin cancer in Alberta is 1 in 7. In the United States it is 1 in 6 and, by the year 2000, it will be 1 in 5. In Australia it is 1 in 3.

On top of this incidence rise, the risk increases secondary to ozone depletion. The United States' Environmental Protection Agency states that with each 1% decrease in ozone concentration, the amount of UVB light reaching the Earth will increase by 2% and there will be a corresponding increase of 2 to 3% in the number of skin cancers.

We will not see the impact of this for about 10 to 20 years. There is potential for monumental increases in skin cancers, the likes of which has never been seen before.

Sunlight consists of a spectrum of radiation. UVC is largely filtered out by ozone. UVB is also filtered out by ozone to a large degree. However, with ozone depletion, the amount of UVB radiation will increase. These rays are largely responsible for skin cancers. UVA, also responsible for skin cancers, is not affected by the ozone layer.

Who Is At Risk:

- Thomas B. Fitzpatrick, Chairman of the Department of Dermatology at Harvard University, has described six types of skin reactivity. In the first three types, we see the highest risk of skin cancer developing. A type one person always burns and never tans, while a type two person usually burns and tans with difficulty. A type three person sometimes burns but tans well;

- Those who work in the sun and those who play in the sun are at the greatest risk;

- Individuals who are immunocompromised, i.e. heart transplant recipients and patients with certain diseases (such as systemic lupus erythematosus) and other congenital diseases;

- Many experts feel that a family history of cancer increases the risk by at least a factor or two. Ronald Reagan had two skin cancers on his nose while he was president of the United States. He bore out the fact that a person with one skin cancer has an increased risk of 1 in 3 of getting another; and

- A history of blistering sunburns in childhood increases the risk of developing the most serious type of skin cancer, melanoma.

Warning signs to watch for include the following:

- Sun-damaged skin that looks like an old catcher's mitt. The skin is tanned but looks like leather. The wrinkled appearance is also a sign of severe sun damage;

- Actinic keratoses or precancerous lesions are another sign of impending skin cancer. They feel like a fine grade of sand paper and precede skin cancer by 5 to 10 years;

- Any skin abnormality that will not heal in one month. It may be an early basal or squamous cell carcinoma requiring a biopsy; and

- A change in the asymmetry, border, colour and diameter of moles.

Steps to take to prevent skin cancer include:

- Avoiding peak hours of sunlight by staying out of the sun between noon and 4:00 p.m.;

- Wear protective clothing (the best type of sun screen);

- Use a sun screen with an SPF rating of 15 or more and always apply it before going outdoors;

- Teach children sun protection early. For example, Kirk Barber, a dermatologist in Calgary, has developed a program that will be instituted through that city's school boards to teach children from Kindergarten to Grade 3 how to prevent skin cancer;

- Do not work on a tan or patronize tanning salons;

- Examine your skin regularly and see your physician promptly if you notice changes; and

- Know your medications because some exacerbate the potential of the sun to burn the skin.

Early detection plus prompt treatment equals cure. Because most skin cancer is curable, at least to a great extent, some people think it is not necessary to pay attention to these messages. If the rate of skin cancer continues to climb, we will not have enough resources to cope with the problem.

Think about:

- Your relationship to the outdoors;
- Your children;
- All children in general;
- How to prevent skin cancer; and
- How the sun can be enjoyed safely.

The Canadian Dermatology Association (CDA) has tried long and hard to change the behaviour of people. They have implemented a sun awareness campaign that emphasizes these messages through:

- A "Sun Awareness" week, June 1-7;
- Pamphlets to disperse to patients;
- Posters to display in physicians' waiting rooms;
- Skin cancer screenings in public areas (in Edmonton, we plan to hold this on the August long weekend at Heritage Days); and
- Use of only CDA-approved sun screens.

More education is necessary. There are many other agencies involved, including the Canadian Cancer Society. Perhaps the government can become more involved. More research and evaluation is also necessary. We still do not have the ideal sun screen for blocking out the sun. We still do not know how to cure cancers once they have spread beyond the skin or whether our statements are having an impact on changing behaviour.

Hopefully, from all of our efforts, we can have a better understanding of how we can interact with the sun and the Earth.

SMALL GROUP WORKING SESSIONS AND REPORTS:

How Small Group Responses Were Summarized

During the afternoon sessions, small discussion groups were organized. Members of the groups were determined by the focus of the organization they represented: Agriculture; Education and Child Care; Environment; Health; and Recreation/Sports/Tourism.

Task:

To summarize the small group responses from the May 5, 1992 Health Effects of Ozone Depletion and UVB Radiation Stakeholders' Forum by identifying common themes from three questions posed to the groups. The questions were:

1. What is currently happening?
2. What can our organizations do?
3. What do we want the government to do?

Method:

Questions 1 and 2 posed no problems. They essentially focused on what existing groups did or could do. Themes common to most small groups were summarized. Themes not common to most groups were listed by specific group and statements which did not answer the questions were not considered.

In trying to apply this methodology to Question 3, it was found that Question 3 could not be handled in the same way. Question 3 focused on "what" the groups wanted the government to do. Answers varied from very specific actions to general principles. Responses were sorted into five major categories: Policy; Legislation and Regulation; Agency Coordination; Education; and Protective Products. Within each category, responses ranged from general to the more specific. Statements which were not common to most groups were listed by specific group.

SMALL GROUP WORKING SESSIONS AND REPORTS:

1. What is Currently Happening?

Within your individual organizations, please identify any activities that have been initiated to address the issue of the health effects of ozone depletion and UVB radiation.

Themes Common to Most Groups

Gathering and disseminating information on "how" to protect the public and workers by: answering questions; giving talks; distributing news releases, pamphlets, newsletters and fact sheets; paying for media advertisements; hosting or participating in community and recreational activities and displays; and through school, day care, summer, nursing, and health promotion programs and special events.

Specific Issues by Group

Agricultural

- Growing awareness among farmers about health issues and exposure;
- Exchanges of information with pharmaceutical organizations;
- Initiated a Farmer Pesticide Certification Program that includes sections on health, safety and the environment;
- Setting up an environmental committee.

Education and Child Care

- Many daycare centres have been providing sun screen for children as an integral component of the education program;
- Resources and programs are being introduced into the curriculum.

Environmental

- Lobbies governments;
- Initiated ozone campaign to achieve Edmonton by-law on ozone depletion;
- Lack of information on the cost-effectiveness of substance regulations affecting ozone depletion;
- Canadian Council of Ministers of the Environment adopted an earlier update for reduction of ozone depleting substances such as CFC's and of greenhouse gases.

Health

- City of Calgary by-laws regulating the servicing of automobiles and emissions of CFCs and halons;
- Confusion between ground level and upper level ozone;
- Monitoring and regulating sun tanning parlours;
- No collaboration in place between agencies;
- Only 350 dermatologists in Canada;
- Outdoor workers not informed;
- Sun screens and sun glasses being tested;
- Guidelines for the provision of sunscreen and shade will be addressed in the Day Care Licensing Policy Manual;
- Family and Social Services will distribute sun safety information to day care centres.

Recreation/Sport/Tourism

- Solid, chemical and liquid waste being controlled, toxic waste round-up is supported in communities.

SMALL GROUP WORKING SESSIONS AND REPORTS:

2. What can our organizations do?

What are some of the activities or initiatives that could be carried out by your organization?

Themes Common to Most Groups

Programs which focus on personal responsibility:

- Disseminate information and educate the public in healthy and safe lifestyle practices;
- Raise public awareness with consistent messages through a coordinated effort to change attitudes (e.g. federal government's "Participaction");
- Develop "theme teams" and strengthen community skills;
- Develop guidelines for length of time in the sun;
- Target specific audiences -- children, teens, adults, new moms, parents, teachers, lifeguards, farmers and farm workers, construction workers and spectators at outside events;
- Target specific places -- schools, sunbathing areas, playgrounds, sports events and concerts;
- Change architecture to reduce reflective surfaces and add trees to promote shade (in playgrounds, playing fields, parks, and recreation areas);
- Promote ways to reduce skin cancer by buying sun screens, wearing protective clothing and hats, etc;
- Implement the above through role modelling, training key leaders, media, TV, posters, pamphlets, coordinated advertising and a coordinated multi-stakeholder approach.

Programs which focus on environmental problems:

- Reduce energy use and greenhouse gases;
- Take an advocacy role in promoting public awareness on how to change this long-term problem with a long-term solution;
- Cooperate with other groups and agencies and undertake collaborative research.

Specific Issues by Group:

Education and Child Care

- Find suppliers who give discounts on sun screen supplies;
- Educate parents.

Agriculture

- Increase working with health units throughout the province.

Environment

- Boycott CFC-producing firms;
- Need to come to grips with a reasonable definition of sustainable development;
- Put public pressure on governments to ensure their goals for ozone depleting substances are met;
- Continue research into the most cost-effective solutions;
- Put *Alberta's Environmental Protection and Enhancement Act* in place;
- Improve public involvement;
- Clean Air Strategy for Alberta is underway.

Health

- Better enforcement of workers' legislation, hard hat enforcement, wearing long pants;
- One coordinating, governing body;
- Expand the Alberta Alcohol and Drug Abuse Commission's magazine to include health information;
- Expand with those organizations who have the network or the media;
- Educate the public to be aware of their responsibility in monitoring their use of air conditioners because enforcement and regulation is more difficult and expensive;
- Need money and a lot of effort to change ideas;
- Initiate change using health unit boards;
- Need to provide immediate rewards for affecting behaviours;
- Commercial refrigeration maintenance;
- Refrigerator disposal.

Recreation/Sport/Tourism

- Investigation of local recreation facilities, ice arenas and equipment (with air conditioners) to determine if CFC's can be changed to HCFC's.

SMALL GROUP WORKING SESSIONS AND REPORTS:

3. What Do We Want the Government To Do?

What feedback would you give in terms of specific actions and a general process to address the issues identified?

Themes Common to Most Groups

1. Policy:

   - Formulate national and provincial policies with clear statements on the use of CFCs and action to be taken by various departments, including communicating ongoing work and results;
   - Develop integrated strategies with municipal governments and regional organizations for the design of parks and school yards, recognizing that more trees could increase the rate of assaults;
   - Provide leadership and continue proactive work on emissions (e.g., Clean Air Strategy for Alberta, *Alberta's Environmental Protection and Enhancement Act*);
   - Governments should be more proactive than reactive and could do a better job of communicating with the public and providing them with information;
   - Alberta Health should take a lead role in speaking for the health of the people;
   - Call a provincial conference to address all these issues;
   - Balance food protection with skin protection.

2. Legislation and Regulations:

   - Enact strong legislation and tougher regulations on CFC release;
   - Provide stronger enforcement of regulations so these chemicals can be stopped at the source;
   - Research the cost-effectiveness of regulations versus incentives and offer subsidies for research into safer substances.

3. Agency Coordination

   - Coordinate government departments and stakeholders working on this issue and deliver a consistent message to the public;
   - Form partnerships with industries;
   - Facilitate a strong informal network with all organizations;
   - Coordinate scientific research.

4. Education:

- Educate: legislation is not sufficient;
- Coordinate a provincial social marketing campaign to the public to promote awareness, education and positive behavioral changes;
- Make the public aware of government policy development and initiatives and the public's role as enforcers;
- Improve awareness of the CFC problem such as garages that recycle or contain CFCs';
- Initiate classroom activities for school children, recognizing that children adopt their parents' bad habits;
- Provide funds for shared resources (pamphlet development and publication), prevention and to support environmental groups in these activities;
- Undertake evaluation research to obtain baseline data on the extent of the problem, trends and the effect of campaigns.

5. Protective Products:

- Regulate dangerous products;
- Sun screen prices are too high;
- Regulate makeup (advertising claims state suncreen is waterproof and it is not);
- Establish clothing standards for outside workers;
- Research better products;
- Research sun-protective clothing.

6. Specific Issues by Group

Agriculture

- Education -- Environment Canada needs to provide us with information we can use that comes from one central place.

Environment:

- Policy -- Develop non-government / non-industry public health task force.

Health:

- Policy -- Set an example for Third World countries and actively pursue international conventions, protocols and statements. Address the primary social issues (e.g. primary needs, food shelter, etc) before high risk groups can address the potential health risks of a depleting ozone layer.

- Legislation and Regulations -- Promote the use of CFC alternatives. Build a change of attitudes into provincial and municipal stakeholders. License air conditioning technicians.

- Agency Coordination -- Exercise more control over organizations.

- Education -- Establish a provincial clearing house that offers available resources with accurate information in plain language. Coordinate a health education network. (commercials must be funded provincially). Improve education and training of health professionals and front-line workers.

- Protective Products -- Impose import restrictions on countries that violate measures to restrict ultraviolet radiation exposure. Ban exports of dangerous products from Canada to Third World countries. Purchase products in bulk to reduce costs to consumers. Provide tax exemptions for sun screens. Make sun screens and hats more readily available. Make sun screen with mosquito repellent.

PARTICIPANTS

Alberta Agriculture - Home Economics Branch
Alberta Association of Family Dayhomes
Alberta Association of Municipal Districts & Counties
Alberta Cancer Board - Tom Baker Centre
- Cross Cancer Institute
Alberta East Central Health Unit
Alberta Education
Alberta Energy
Alberta Environment - Communications
Alberta Family & Social Services - Day Care Programs
Alberta Forest Service - Forest Protection
Alberta Health - Communicable Disease Control
- Communications
- Community Health Nursing
- Home Care
Alberta Lung Association
Alberta Occupational Health Nurses Association
Alberta Pharmaceutical Association
Alberta Pork Producers Development Corp.
Alberta Power Ltd.
Alberta Recreation, Parks & Wildlife Foundation
Alberta Tourism, Recreation & Parks
Alberta Transportation & Utilities
Alberta West Central Health Unit
Alberta Wheat Pool
Alberta Women's Institutes
Banff National Park Health Unit
Barons-Eureka Warner Health Unit
Big Country Health Unit
Boys & Girls Club of Edmonton
Calgary Health Services
Canadian Cancer Society
Canadian Dermatology Association - Sun Awareness Program
Canadian Federation of Agriculture
Celanese Canada Inc.
Chinook Health Unit
City of Edmonton - Children's Services
Consumers' Association of Canada (Alberta)
Eco-City
Edmonton Board of Health - Health Promotion
Edmonton Public Schools
Environment Canada
Environment Council
Environmental Resource Centre
Family Life Substance Abuse Foundation
Foothills Health Unit
Fort McMurray & District Health Unit

Fort McMurray Environment Week Committee
Friends of Environmental Educational Society of Alberta
Health and Welfare Canada
Health Unit Association of Alberta
Independent Day Care Association of Alberta
Lakeland College
Lansdowne Day Care Society
Leduc-Strathcona Health Unit
Lethbridge Health Unit
Minburn-Vermilion Health Unit
Mount View Health Unit
Peace River Health Unit
Personnel Administration Office - Occupational Health Section
Private consultants
South Peace Health Unit
Sport Medicine Council of Alberta
St. John's Ambulance
St. Mary's Health Care Centre
Stony Plain-Lac Ste. Anne Health Unit
Sturgeon Health Unit
Toxic Watch Society
University of Alberta - Faculty of Extension
- Department of Health Services Administration
Vegreville Health Unit

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HEALTH

Seventh Street Plaza, 10030 - 107 Street, Edmonton, Alberta, Canada T5J 3E4

In Replying Please Quote:

CANADIANA

AUG 1 1 1992

Dear Participant:

This letter is to provide you with some follow-up to the Health Effects of UV Radiation Stakeholders' Forum held May 5th in Edmonton. We were pleased with the participation and discussion generated by the 90 registrants representing 72 groups and agencies from across the province. The evaluations were very positive.

Participants and many of the groups who were not able to attend had requested follow-up information from the workshop. Attached is a copy of the report of the day's activities. It includes a summary of the speakers' presentations and the small working group comments and suggestions for action within your sector, your community and at the provincial level.

A number of participants at the forum have initiated action within their own communities. If you would like further information we can put you in contact with them. Please take some time to review this report. We hope you will read this report and follow up on those suggestions that are possible for your organization and your community. We have additional copies of this report and a videotape of the workshop presentations is available if you wish to use it.

At the provincial level each department is reviewing the suggestions from the workshop in order to identify what is currently being done and where there are gaps. From this a coordinated action plan will be developed. The interagency group that organized the forum continues to work cooperatively. The Alberta Pharmaceutical Association, the Alberta Cancer Board, the Alberta Cancer Society, the Alberta Dermatologists Association and Environment Canada are continuing to coordinate their public education activities.

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There will be a follow-up forum early in the new year to review activities coming out of the first forum and to plan for the future.

If you wish to provide feedback on the report or to let us know what you have been doing in this area we would be pleased to hear from you and share your experiences with others. We can be reached at the above address or through the government rite operator at 427-5367.

Sincerely,

Katherine Caine, Ph.D.
Director
Health Promotion Branch

Attachment

KC/sd

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